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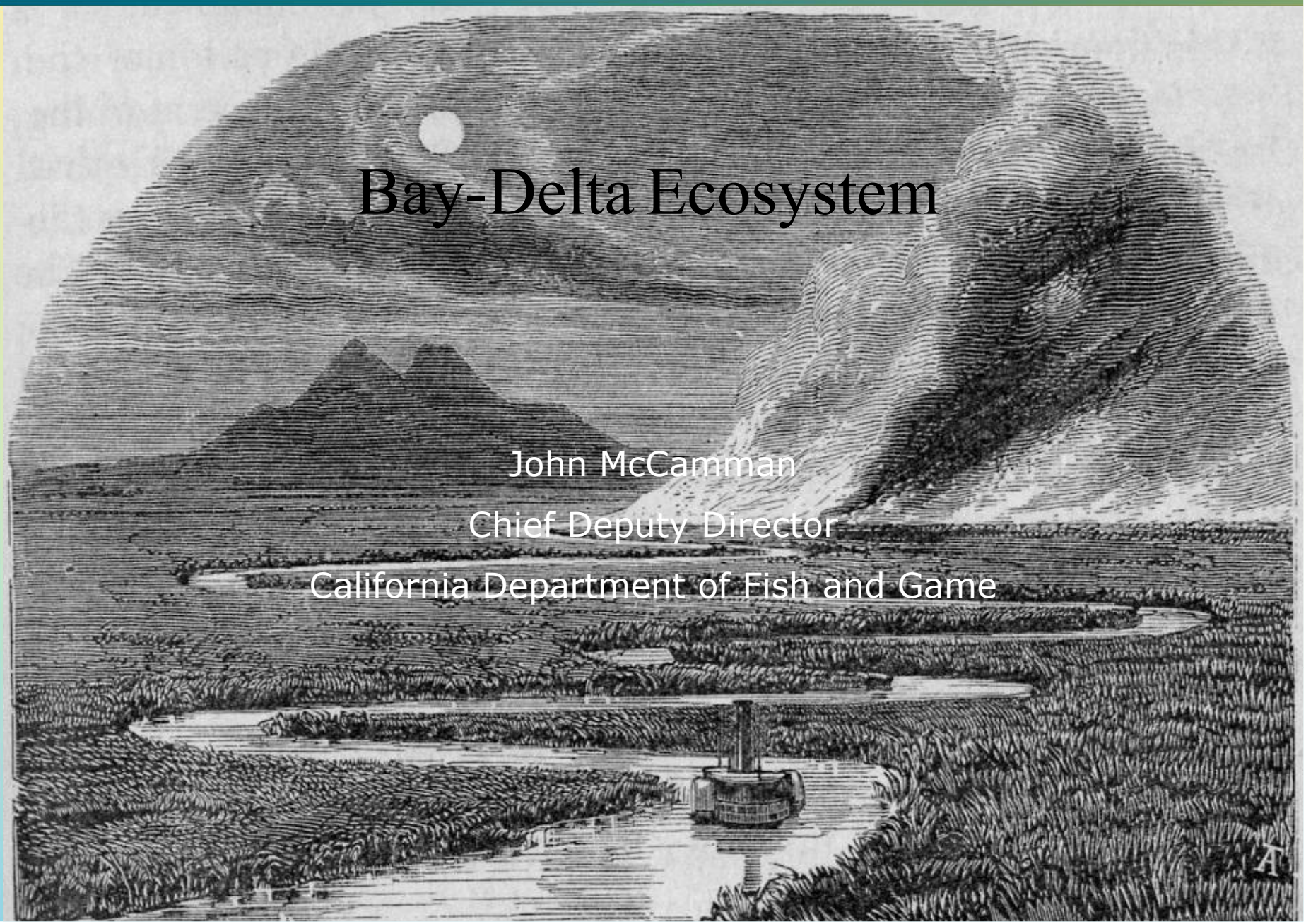
Bay Delta Conservation Plan

Bay-Delta Ecosystem



John McCamman

Chief Deputy Director

California Department of Fish and Game

Historical Connected Waterways of the Central Valley

The Transformed Watershed

Source: The Bay Institute (1998)

Historical Delta

- Vast tidal wetlands
- Dendritic channels
- Seasonal flooding
- Fluctuating salinity
- Connected to floodplains and upper watersheds

Present Delta

- Levied islands
- Simplified channels
- Managed inflows
- Consistently freshwater
- Contained within levies and interrupted by dams

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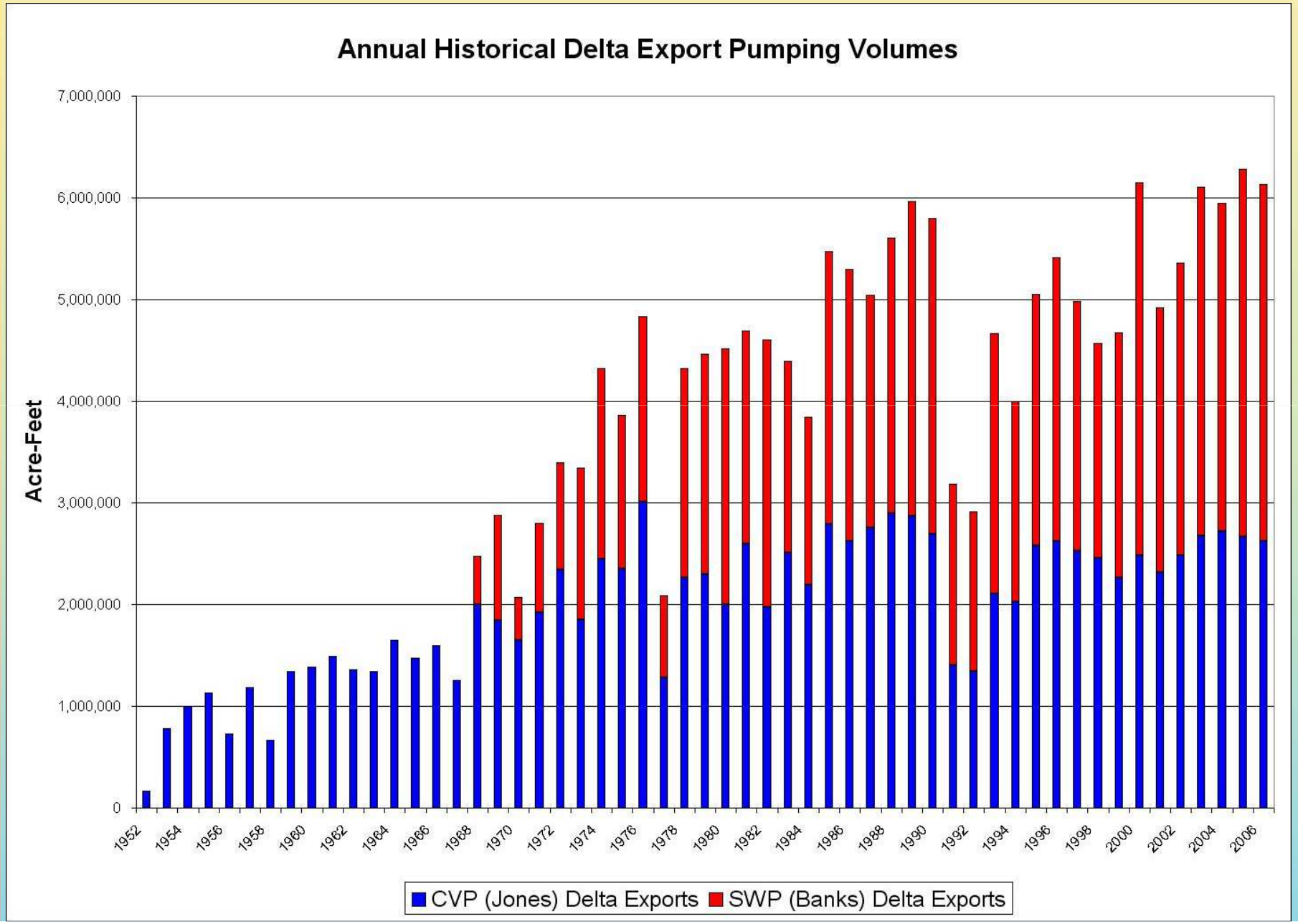

Threats to the Delta

- Climate change
  - Change in hydrologic conditions and runoff patterns
    - Less snowmelt – higher floods – deeper droughts
  - Sea Level rise
  - Temperatures
- Water Exports (Reverse flow, disruption of tidal influence, etc)
- Toxics
- Invasive Species – clams, zooplankton, fish, microcystis
- Seismic issues
- Subsidence
- Random levee failure
- Drinking water quality concerns

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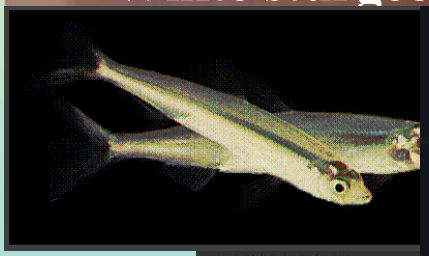
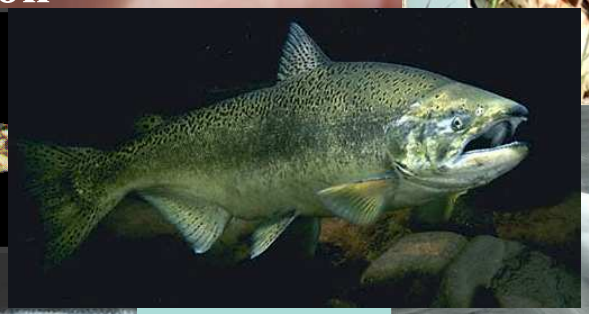
Identified Actions To Restore Many Native Delta Species

- Delta smelt
- Longfin smelt
- Splittail
- Spring run chinook
- Fall run chinook
- Steelhead
- White sturgeon

- Swainson's hawk
- Sandhill cranes
- Neotropical migrant birds
- Clapper rail
- Giant garter snake





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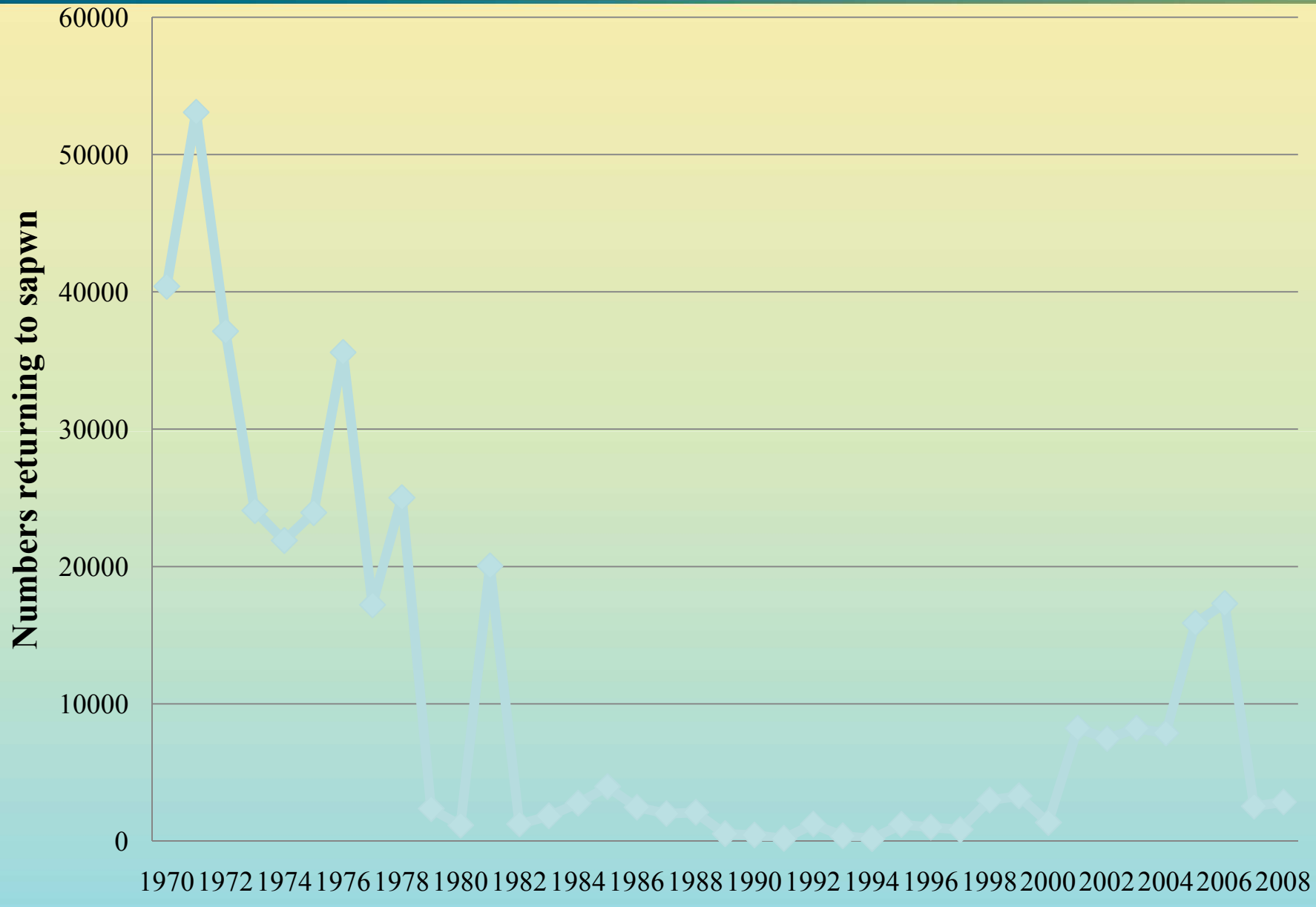
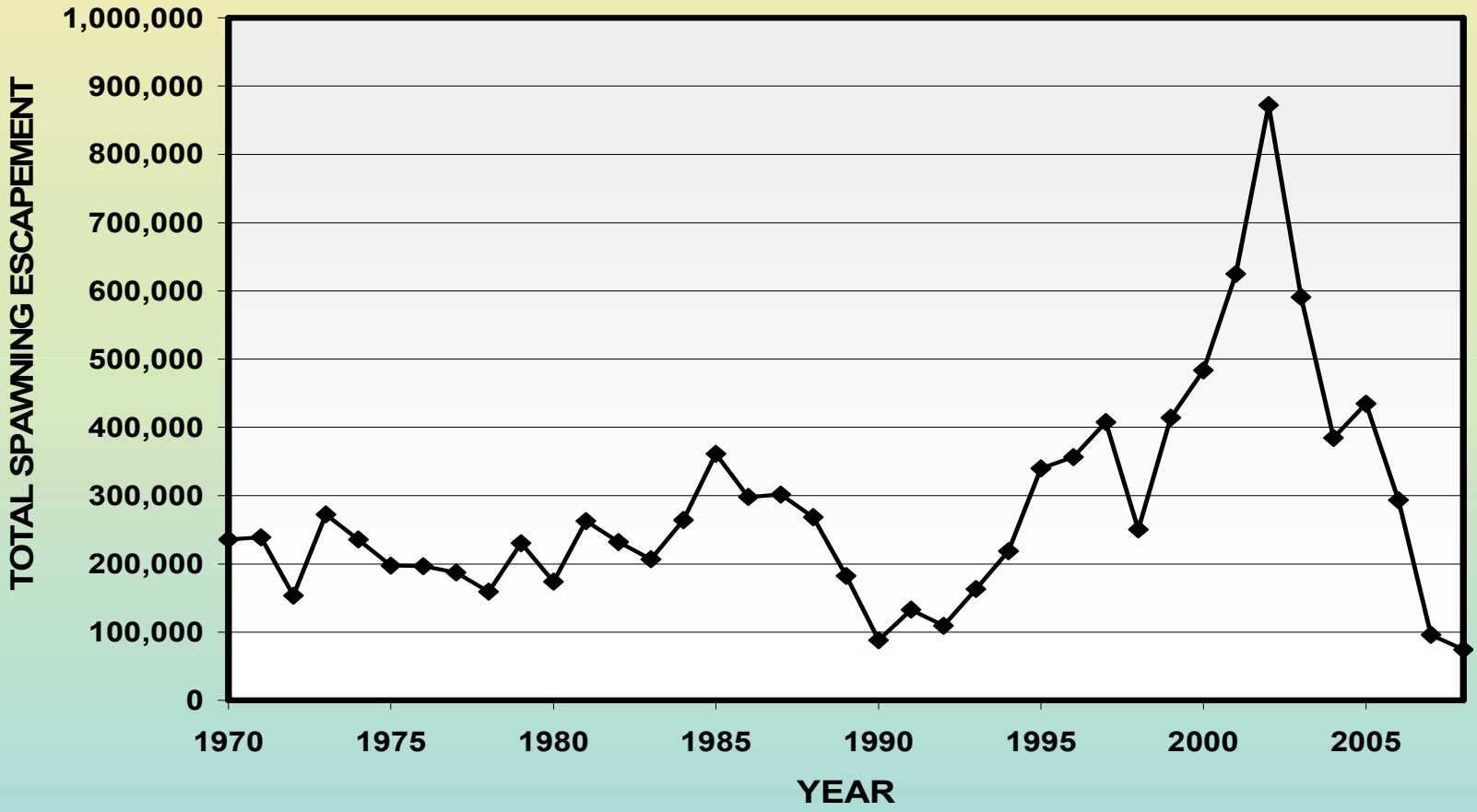
Winter-run Chinook salmon



CENTRAL VALLEY FALL-RUN CHINOOK SALMON



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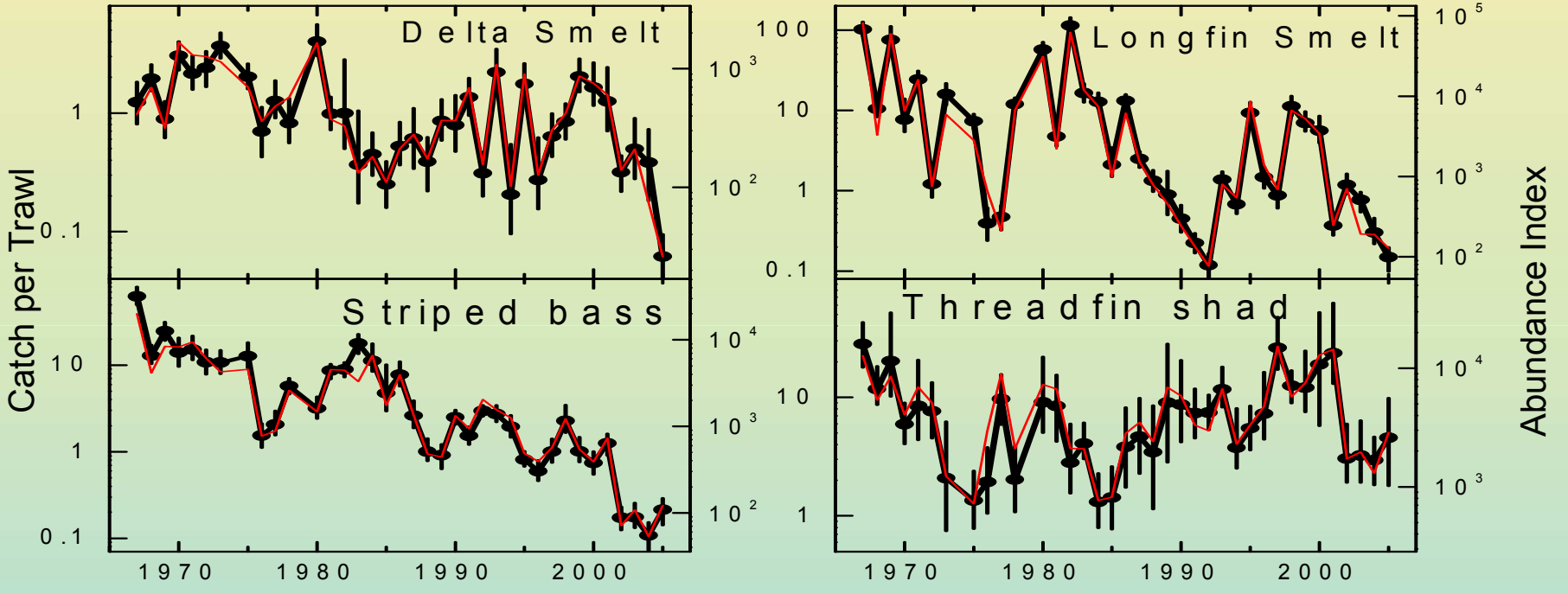
Pelagic fishes continue to decline



Source: Kimmerer and Nobriga (2005); Sommer et al. (2007)

Restoration and Recovery Efforts To Date

CALFED Bay-Delta Program Accomplishments

CALFED Objectives	Performance			Funding
	Low Progress	Some Progress	Significant Progress	Year 1-7 State/Federal Expenditures
Ecosystem Restoration Program				$957m

In Delta
Delta-Related

Accomplishments Snapshot:

- Implemented 795 projects
- 82 fish screens installed/improved
- 55,000 acres agricultural land protected
- 130,000 acres of habitat protected/restored
- Dams/barriers removed for fish

Shortcomings

- Lack of habitat restoration in the Delta and Suisun

CALFED Bay-Delta Program
Program Performance Assessment
Final Draft as of August 20, 2007

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Flow and Habitat Fundamentals

1. Aligning water operations to mimic natural seasonal flows
2. Improving flow in the estuary
3. Linking flows with newly created habitat
4. Protecting fish with state of the art fish screens
5. Continued strategic operation of pumps in south Delta to help maintain in-Delta water quality, but reduce fish impacts of south Delta water diversions

Need Better Regulatory Approach

Existing - ESA Sec.7 / CESA 2081

- One species at a time
- One Stressor – CVP/SWP Operations
- Does not have ability to address to other stressors
- Prevention of Jeopardy only, allow for recovery
- Mitigation only
- Changes in system wide productivity not addressed
- Unstable water supply reliability and no improvements in fish abundance

BDCP – ESA Sec. 10 / NCCP

- **Habitat** Conservation Plan
- Multiple species needs addressed at the same time
- Protection of Natural Communities
- Multiple Stressors addressed
- Conservation measures adopted to address major stressors
- Contributions to the Conservation and Recovery of the system beyond jeopardy and mitigation

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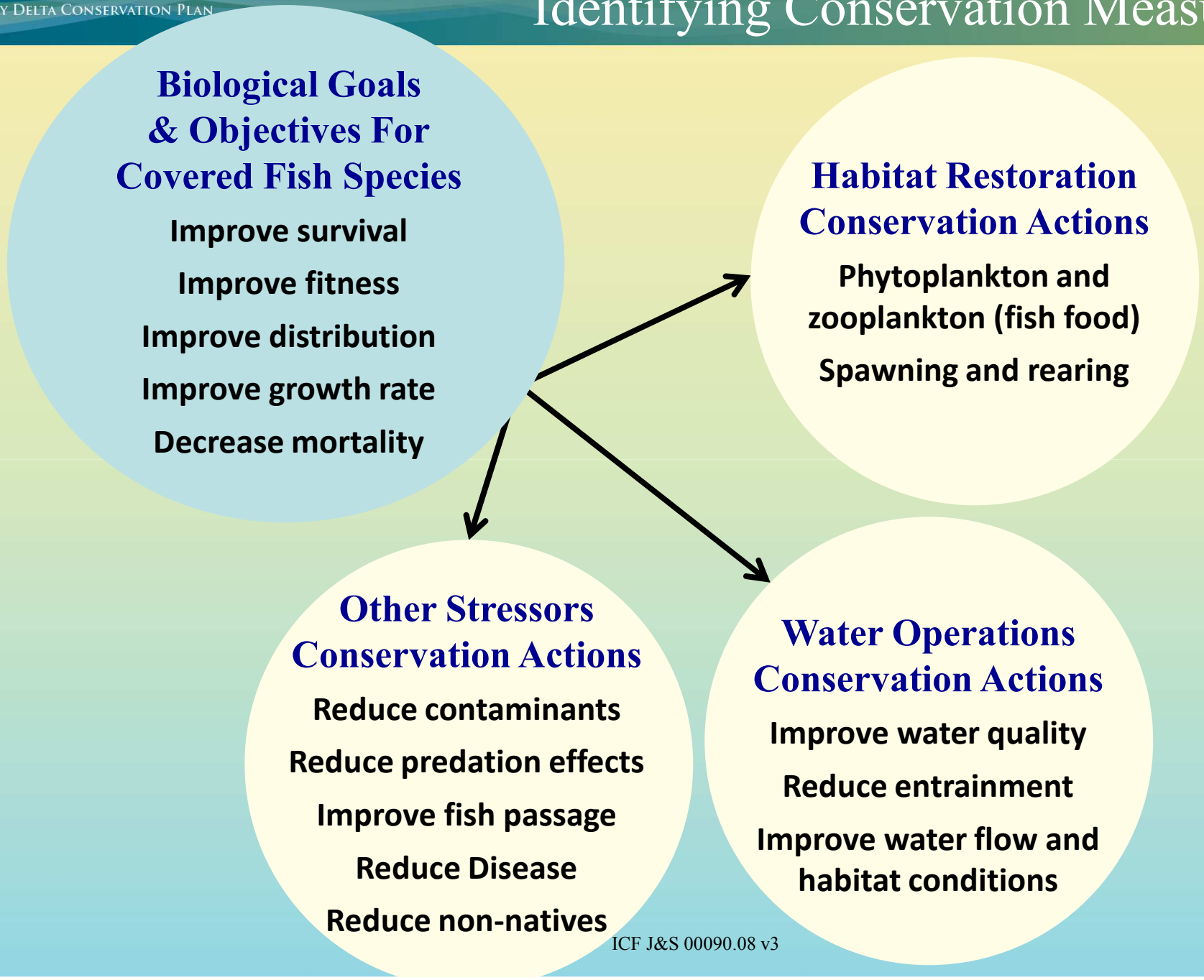
Identifying Conservation Measures



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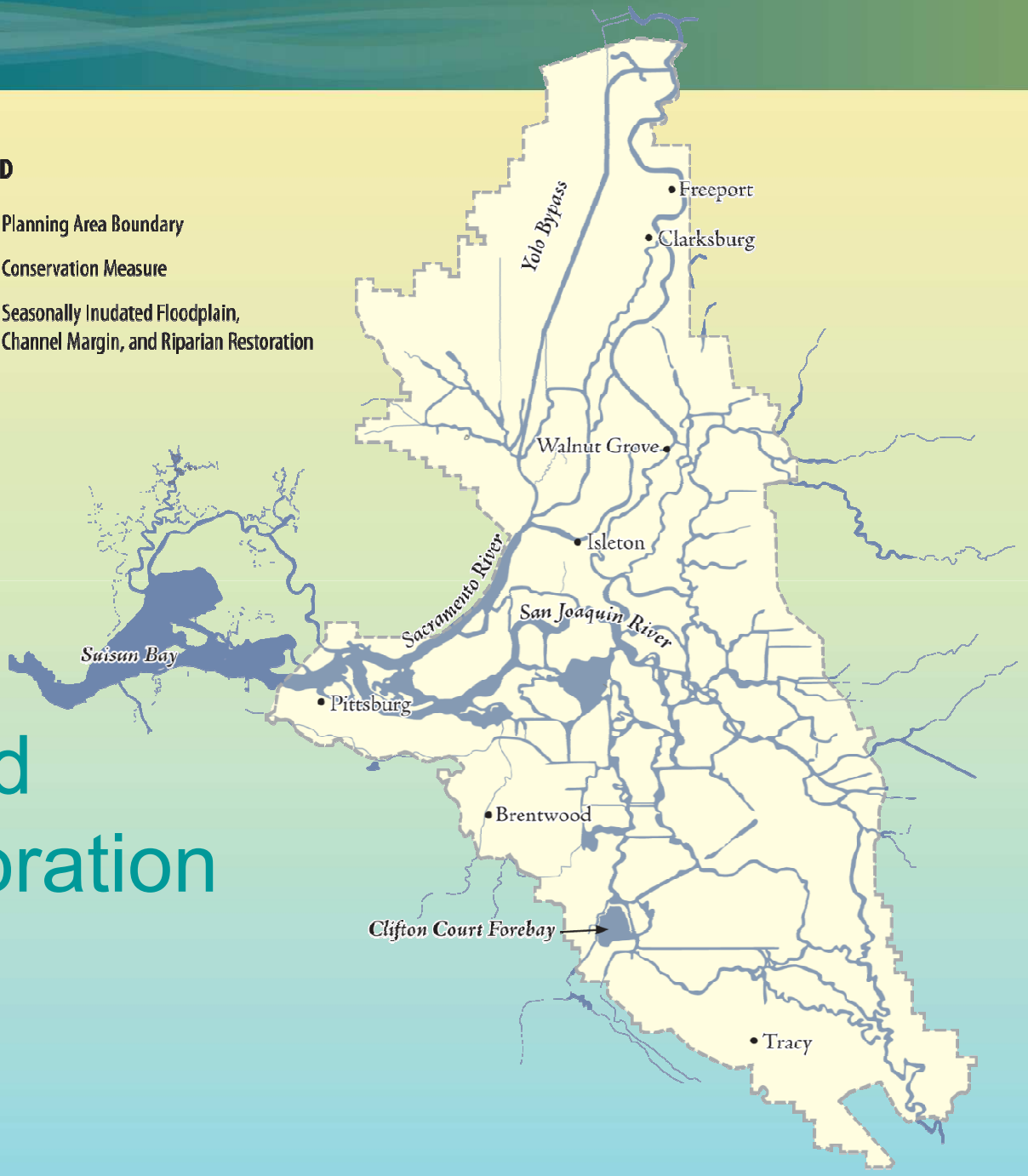
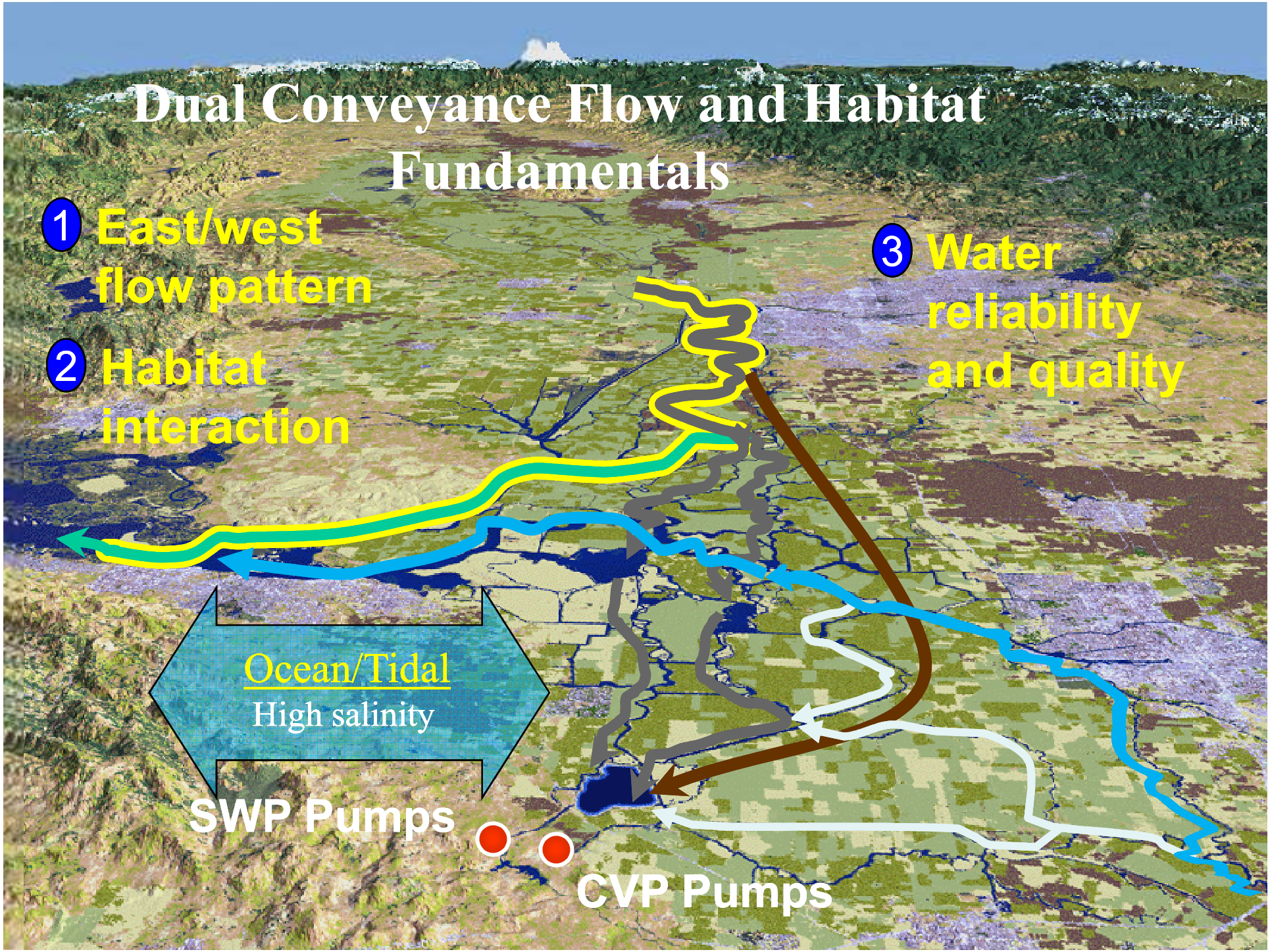
BDCP Proposed Habitat Restoration

Tidal marsh
Floodplain




Dual Conveyance Flow and Habitat Fundamentals
1 East/west flow pattern
2 Habitat interaction
3 Water reliability and quality
Ocean/Tidal
High salinity
SWP Pumps
CVP Pumps

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Draft Conservation Strategy – Major Elements

Habitat Restoration

- **Up to 80,000 acres tidal marsh, riparian, and floodplain**
- **Enhanced floodplain in the Yolo Bypass- temporary inundation**
- **20 miles channel restoration**

Water Facilities & Operations

- **North Delta diversion**
  - 5 intakes
  - 15,000 cfs conveyance design capacity
  - Minimum flows to ensure healthy habitat and water quality
  - Sacramento River flows are always greater than exports
- **South Delta flows**
  - Reduce reverse flows
- **Outflow**
- **Other rules**
  - Delta cross channel
  - Inflows

Other Stressors

- **Scientific evaluation of ammonia and endocrine disruptors**
- **Reduce methylmercury**
- **Support existing programs to reduce agricultural and urban runoff**
- **Support detection and removal of invasive species**
- **Improve hatcheries, allow greater controlled harvest of species in some areas of Delta**

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BDCP the Vehicle for Sustainable Delta Ecosystem

- Co-equal goals of Ecosystem and water supply reliability
- Reduce threats
- Restore habitats
- Increase understanding